BAYKON
Industrial Weighing Systems

BX21-BX21S

Industrial Indicator

User Manual

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IMPORTANT

This manual contains instructions for the use and maintenance of the instrument. Please read user manual carefully before installing the instrument or using the scale.

WARNINGS

Read this section carefully before installation of the BX21 indicator.

- Before start using the instrument, check if the voltage indicated on the AC/DC adaptor label is the same as the local power supply. If it is not, do not connect the scale to the power line (*Contact with instrument representative*).
- Before energizing the instrument, check all connectors are installed properly. All external cables should be installed safely to avoid mechanical damages.
- The scale should only be used under proper environmental conditions indicated in this operation manual.
- Do not use this scale in places where there are unstable conditions or explosive danger.
- Do not place the scale near heat sources or under direct solar radiation influence.
- Keep the scale far away from other electromagnetic radiation sources. Its influence could affect the weighting precision.
- When low-battery announcement appears, the battery should be charged. If the battery remains discharged for a long time, it deteriorates and could stop working. Every month battery charging is recommended for long time battery life, if the scale is not used.
- Use only original BAT21 Li-ion battery for your instrument safety.
- The battery shall be taken before opening the housing. Otherwise, the electronic board will be damaged (*Page 12*).
- Disconnect from power supply and take out internal battery located on the rear of the instrument and wait for 3 minutes before interfering the instrument.
- Battery life is 300 cycle. It should be changed with the original “BAT21 Li-ion” battery, if its life is expired.

In the case of any inconvenience of your application to the above items, contact with instrument representative.

IMPORTANT

In case of breakdown or inappropriate operation working due to an inadequate following of the instructions given before, the guarantee right will be lost.

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1. FEATURES

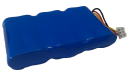
- 40 x 112 mm height liquid crystal display with backlight.
- Multicolor LCD display (BX21S)
- Navigation keypad for intuitive menu use.
- Programmable to g, kg, lb or oz weighing units.
- Unit change feature between metric and imperial units.
- Single range or Multi range operation.
- Linearity correction.
- Remote weight indicator operation.
- Check weighing function for Hi/OK/Low with optical and acoustic announcement.
- Piece counting function in high accuracy.
- 100 products memory for check weighing.
- 100 memory for checking the quantity at piece counting.
- 100 products memory for piece counting.
- Accurate animal weighing with dynamic load weighing algorithm.
- Accumulation in weighing and in piece counting.
- Automatic power off function.
- Multilanguage RS 232C data output for printer, PC or remote display connection.
- 100 – 240 VAC, 50-60 Hz / 12 VDC, 0.8A regulated power adaptor (BX21).
- 12 VDC or 100 – 240 VAC, 50-60 Hz (BX21S)
- Optional second RS-232C data output (PC and printer).

2. PRODUCT VARIANTS

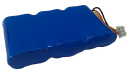
BX21 has some variants for different applications to fit your usage. You may order BX21 indicator as;

Variants	OIML	Battery	Housing	Power
BX21	Yes	Yes	Plastic	12 VDC (with 100 – 240 VAC / 12 VDC adaptor)
BX21S	Yes	Yes	Stainless steel	100 – 240 VAC (internal power supply) or 12 VDC (specify at ordering)

3. BX21 Package Box Including

	BX21 Indicator
	100VAC - 240VAC, 50 – 60 Hz / 12VDC, 0.8A regulated adapter.
	Indicator support part 1 (will be mounted on the rear of the indicator)
	Indicator support part 2 (will be mounted on the Indicator support part 1)
	Indicator support part 3 for wall mounting (will be mounted on the Indicator support part 2)
	Battery BAT21 Li-ion
	Sealing kit for sealing with lead (only approved versions)
	1 pcs Load cell connector
	4 pcs rubber foot for usage on the table
	3 pcs M4 screw for Support part 1 installing
	2 pcs allen screw to install on the indicator support 2
	Operation manual

4. BX21S Package Box Including

	BX21S Indicator
	Indicator support part 2 (will be mounted on the Indicator support part 1)
	Indicator support part 3 for wall mounting (will be mounted on the Indicator support part 2)
	Battery BAT21 Li-ion
	2 pcs allen screw to install on the indicator support 2
	Operation manual

5. KEYPAD AND DISPLAY DESCRIPTION

This small indicator has a big and wide angle LCD display with backlight and keys are ergonomically designed in front of the instrument. The weight display is 6 digit and 25 mm height.

The meanings of the annunciators on the display are;

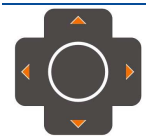
~	**Unstable :** This sign appears if the load on the scale is not stable. The weight value of the object should be read if the scale is stable. The taring, zeroing, printing and accumulation are available when the scale is stable.
>0<	**Center of zero :** This sign appears if the weight is ±0.25e of the center of the zero. *(Page 14)*
kg	**Weight unit :** The weighing unit is located on the right of the weighting display as kg, g, lb, and oz. *(Page 22)*
NET	**Net weight :** This sign indicates that the weight indication is in net. *(Page 14)*
B/G	**Gross weight :** This sign indicates the displayed weight value is gross.
2 1	**Operation range :** Announces the operation range of the multi range scale.
	Piece counting mode : The value on the display indicated the quantity. *(Page 17)*
Σ	**Total :** Signs the displayed value is the accumulation in the memory *(Page 16 in weighing and page 19 in piece counting)*
APW	**APW :** Announces the displayed value is the average piece weight. *(Page 19)*

G/N	**Gross / Net :** Temporary gross indication. *(Page 22)*
	Battery charging level : This sign indicates the battery charging level. Moving level indicates the battery charging.
	Battery is empty : Announces the battery is discharged and should be charged in a first convenient time.

Key functions in usage

Keys and their functions of the BX21 weighing indicator are ;

	Power on/off key : Press button to turn it on. To turn it off, press the button for one second.
	*** key :** The most frequent used function key. Press to use the selected function. *(Page 28)*
	Sampling key : Press the * key more than one second to start sampling in piece counting. *(Page 17)*
	Escape key : In menu mode, press this key to escape from menu and return to normal mode.
	Tare key : Press this key to deduct the weight of the container placed on the platform to see the net weight value of the added material in the container or taken out material from the container. *(Page 14)*
	Check weighing key : To enter check weighing operation press this key until [H-L : n] message appears. *(Page 21)*
	Zero key : This key adjusts the scale zero, if there is any drift. Zeroing should be done if there is no any load on the platform. *(Page 14)*
	F key : This key is used for its programmed function usage. *(Page 29)*
	ADV key : This key is used to enter advance functions setting by pressing more than one second. *(Page 23)*
	M+ Add to memory key : Press this key to add the indicated weight to the accumulator in weighing and in counting operations. *(Page 16 in weighing and page 19 in piece counting)*
	MR Memory read : Press this key to indicate accumulated total weight in weighing operation or accumulated quantity in piece counting operation. *(Page 16 in weighing and page 19 in piece counting)*

	MC Memory clear key : Press this key to erase accumulated value from memory. The weight and count accumulators shall be erased separately. *(Page 16 in weighing and page 19 in piece counting)*
	Enter key : Press this key for printout.
	**Navigation keys :** Navigation keys are located on the right of the indicator front which are up, down, left and right arrow keys. These keys are used for navigation in set up and to change any numerical value.

6. INSTALLATION

PRECAUTION: *Please read this manual carefully before installation of the instrument. Applying the recommendations in this section will increase your system reliability and long term performance.*

The scale should be placed as clean as possible area, not getting direct sun light if possible, with a temperature between -10 ºC and +40 ºC, humidity not exceeding 85% non-condensing.
BX21 instruments are very low level signal measuring instruments. To avoid electrical noise, BX21 should be separated from the equipment that produces electrical noise.

Step 1: Change the front part of the housing position, if needed. (only BX21 and BX21S 12VDC)

If you want to change the front part of the housing position, you have to do this change before installing the battery.

1. Be sure, battery and AC/DC adaptor are not connected to the indicator at least 3 minutes.
2. Unscrew 4 screws at corners. Open the housing and turn the front part of the housing carefully without touching the electronic board.
3. Close the housing and install screws at corners.

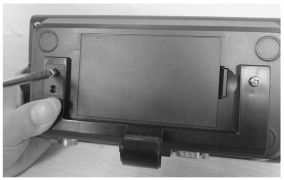
Step 2 : Mechanical Installation

Be sure that the mechanical installation of the instruments is done properly for long time life before starting electrical installation as descripted below.

If the indicator will be used on the table, stick the 4 pieces rubber foots on the back of the indicator (only BX21) .

If the indicator will be installed on the round scale column do not stick the rubber foot and follow the pictures below;

Install the **support part 1** to the indicator with 3 pcs M4 screws in the box (only BX21).



Install the **support part 2** on the indicator as indicated in the picture after installing 2 allen screw on it.

If the indicator will be mounted on the square column or to the wall;

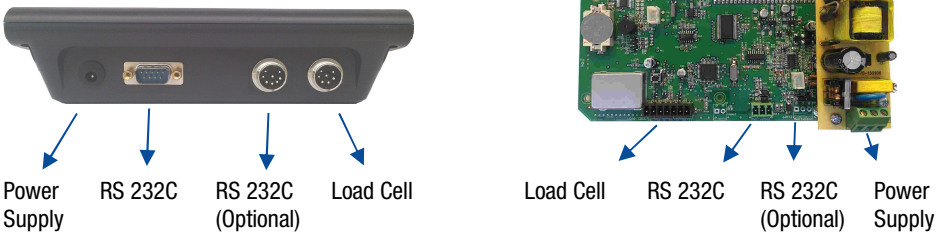
Install the wall mounting part in the round column support as indicated in the picture.

Step 3: Peripheral Connections

Warning:

1. *Please always remember that BX21 indicator is very low voltage measuring instrument. Please do not forget that the instrument must be powered off before inserting or removing any peripheral connector.*
2. *The quality of instrument's grounding will provide weighing accuracy and the safety of your indicator. If the energy condition of your plant is bad, prepare a special power line and grounding.*
3. *All required electrical connections should be done as described below.*

The electrical connectors of BX21 are located at the bottom of the indicator as seen below left and electrical terminals of BX21S are located on the printed circuit board in the housing as seen below right.



Load Cell Connection

To avoid damages, the load cell wiring should be made carefully before energizing the instrument. Load cell connection detail is shown in Figure 6.1. In 4-wire installations the sense and excitation pins with the same polarity **should be short circuited** at the connector side. If you have junction box in your system, use 6 wire cable between BX21 and the junction box, and short circuit these pins at junction box for better performance.

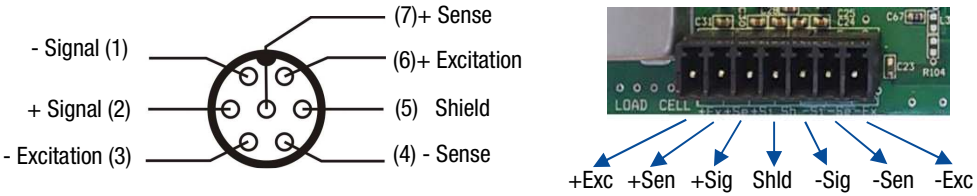


Figure 6.1- Load cell connections (left: BX21 , right: BX21S)

Warning: *Always connect Sense pins to Excitation pins for 4 wire connection. Non-connected sense pins may cause the wrong Excitation voltage measurement and create an accuracy problem.*

Warning: *Connect the load cell cable shield to the reference ground or shield pin of the load cell connector.*

RS 232C Port Connection

RS 232C port usage and specifications are shown in the table below. Refer to Section 13 of the manual to setup this interface.

Usage	Interfacing with Printer, PC, PLC or remote display connection.
Data formats	You will find the data format details on *Page 31*.
Baud rate	1200 / 2400 / 4800 / 9600 (Default) / 19200 / 38400 bps
Length and parity	8 bit no parity
Start / Stop bits	1 start bit and 1 stop bit

Table 6-1 - RS 232C Serial Interface Specifications

Definition	BX21 Pin number (DB9 Male)	BX21S Pin number (Terminal)
RXD	2	1
TXD	3	2
GND	5	3

Table 6-2 - RS 232C connector

RS 232C serial connection is done with two wires as indicated below in Figure 6.2.

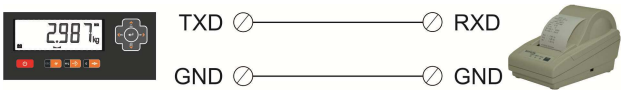


Figure 6.2 – RS 232C connection with a printer

RS 232C serial connection is done with three wires as indicated below in Figure 6.3.

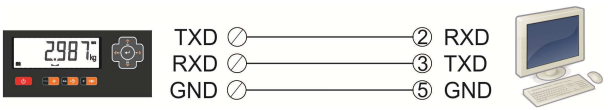


Figure 6.3 – RS 232C connection with a PC

Optional RS232C Port Connection

Optional RS 232C port usage and specifications are shown in the table below. Refer to Section 13 of the manual to setup this interface.

Usage	Interfacing with Printer, PC, PLC or remote display connection.
Data formats	You will find the data format details on *Page 32.*
Baud rate	1200 / 2400 / 4800 / 9600 (Default) / 19200 / 38400 bps
Length and parity	8 bit no parity
Start / Stop bits	1 start bit and 1 stop bit

Table 6-3 - RS 232C Serial Interface Specifications

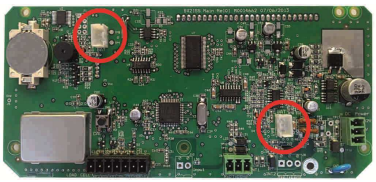
Definition	BX21 Pin number (Round Male)	BX21S Pin number (Terminal)
TXD	2	2
GND	3	3

Table 6-4- RS 232C connector

Step 4: Battery installation

The Li-ion battery should be installed in to the instrument first as described below.

1. At BX21, open the battery cover at the rear of the housing. At BX21S, open the housing and disassemble the battery fixing plastic part.
2. Install the battery cable to its connector and put the battery in to the it's place carefully. The location of the battery connector of BX21 is seen in the battery housing and battery connectors of BX21S (one of them which is closer to the battery will be used) on the main PCB are shown on the right.



3. Make the cable regular in the housing before closing the battery cover and close it.
4. Switched of the instrument to start the next step, if it is powered on.

Step 5: Power Supply Connection and Grounding

The weighing instruments measures very low signal levels. The quality of the power line will determine the accuracy and the safety of your measuring system. It is very important that the instrument should not share

power lines with noise-generating parts such as heavy load switching relays, motor control equipment, inductive loads, etc. If the condition of the power line in the plant is poor, prepare a special power line and grounding.

The 12 VDC variant instruments shall be used with the regulated 12 VDC adaptor supplied with the instrument. Connect the AC/DC adaptor to the indicator before plugging the adaptor to the power line.

Before connecting the power supply, check that the voltage written on the AC/DC adaptor is the same as the local power supply. If it is not, do not connect the scale, and contact your authorized representative. If the voltage is correct, connect the plug on the power cable to the power supply.

The protected ground shall be connected to the 230 VAC powered instrument against the safety and electrical disturbances.

After the scale has been connected, it performs a display test. When the display shows zero, the scale is ready for operation.

Step 6: Check the scale performance

Warning:

1. *The scale set-up and calibration should be done according to your application. Please read this document carefully and select the parameter values which will fit your application before programming the instrument.*
2. *You cannot change Set-up parameter values and calibration after sealing the instrument in legal usage. Be sure the proper adjustments you done before sealing the scale.*

Check the scale accuracy by loading it with test weights before usage. If there is any error, call the authorized technician to adjust the scale.

Step 7: Advanced functions setting

Advanced functions shall be adjusted for your application for having best performance from the scale as described on *Page 23.*

After following 6 steps above, you can start to operate with your scale if it is connected to the power line.

Step 8: Charging the battery

The battery charging in first usage is recommended for long battery life. Do not disconnect the instrument from power line at least 12 hours for charging the battery.

If you do not use the instrument long time, recharging the battery every month is recommended.

7. BASIC WEIGHING

Press [**On/Off**] key to switch on the scale. Indicator activates the display for a few seconds then the indicator model name and version are displayed before display testing. After start up cycle, the weight value is displayed. [**E E E**] prompt at power on announces zeroing range at the power on is exceeded or scale was not unloaded at power on . The scale should be unloaded before power on. (*Page 36*)

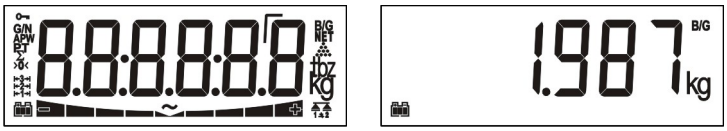


Figure 7.1 - LCD Display segments and Weight display.

Place the object you desire to weight over the plate. The weight of the object is on the display after disappearing the ~ symbol.

If you programmed one of the function keys (***** or **F** key) for unit changing, press this key to select desired weighting unit (*Page 22*).

Zeroing

Zeroing is done to compensate deviations from zero of the unloaded scale.

1. Clean the unloaded platform and check if there is anything touching the platform.
2. Press the **Zero** key to compensate the zero deviation. The zeroing is done if the scale is stable and in zeroing range.
3. **›0‹** sign is appears to indicate the zeroing is done and the scale is at center of zero.
4. If zeroing is not done properly, wait for the ~ sign disappear and press **Zero** key again.

Taring

Taring is done to deduct the container weight and to see the loading in the container or unloading the container as a net weight. BX21 is programmable for 3 type of tare function: Multi tare, Tare/Clear, Automatic tare *(Page 30).*

Warning: *Tare value cannot exceed the maximum scale capacity. The scale capacity in Net is the subtraction of maximum capacity to the tare weight. Capacity in Net = Maximum capacity – Tare weight.*

Multi taring

1. Place the container on the platform and press the **Tare** key.
2. The display value is zeroed and the **NET** (net weight) symbol appears.
3. Place the material in to the container and read the net weight.
4. The tare value is used until either a next tare or pressing **Tare** key after unloading the scale or until zeroing the scale.

Tare / Clear

1. Place the container on the platform and press the **Tare** key.
2. The display is zeroed and the **NET** (net weight) symbol appears.
3. Place the material in to the container and read the net weight.
4. Press the **Tare** key to clear the tare. Or press the **Zero** key after unloading the platform.

Auto Tare

This function allows taring automatically after loading the scale in gross operation without pressing **Tare** key if the load is bigger than 20e. After unloading the scale, the indication goes back to the gross. To activate the auto tare function, refer to Advanced functions (*Page 30*).

1. Place the container on the platform.
2. Scale activates the tare function automatically after stabilization.
3. Place the material inside the container for net weighing.
4. After unloading the scale, the indicator starts to indicate in gross.

Gross / Net Function

You can use the Gross/Net function at any time to switch the display between the net and gross weight, if you programmed one of the function keys as **G/N** key. After the **G/N** key is pressed, the display shows the gross weight for a few seconds and then automatically goes back to the net weight indication.

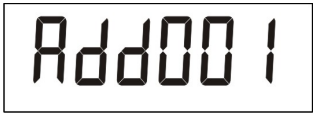
Printing

You may connect your indicator to the printer as indicated in Figure 6.2 and adjust BX21 RS 232C serial data output related parameters and printer parameter to select the printout ticket form from the table below. Press **Enter** key to print the ticket when the indication is stable after loading. As you see in this table, printout contains different data depending on the operation mode *(Page 33).* For 16 character printers, select small printer format which has abbreviated data names.

Ticket	Basic Weighing	Animal Weighing	Piece Counting	Check Weighing
Form 1	Gross 4.205 kg	Dyn Gross 4.206 kg	Quantity 4205 pcs	Gross 0.030 kg OK
Form 2	Weighing number #000010 15-09-2012 01:04:03 Gross 4.771 kg Tare 1.675 kg Net 3.097 kg	Weighing number #000014 15-09-2012 01:08:57 Dyn Gross 4.771 kg Tare 1.675 kg Dyn Net 3.096 kg	Weighing number #000018 15-09-2012 01:14:39 Gross 4.770 kg Tare 1.675 kg Net 3.096 kg Piece Weight 0.00100 kg Quantity 3096 pcs	Weighing number #000024 15-09-2012 01:24:06 Gross 1.705 kg Tare 1.675 kg Net 0.030 kg OK
Form 3	Weighing number #000011 15-09-2012 01:04:53 Gross 4.771 kg Net 3.097 kg	Weighing number #000015 15-09-2012 01:10:02 Dyn Gross 4.771 kg Dyn Net 3.096 kg	Weighing number #000020 15-09-2012 01:16:35 Gross 4.770 kg Net 3.095 kg Piece Weight 0.00100 kg Quantity 3095 pcs	Weighing number #000026 15-09-2012 01:24:47 Gross 1.706 kg Net 0.031 kg OK
Form 4	Weighing number #000012 15-09-2012 01:05:58 Net 3.096 kg	Weighing number #000016 15-09-2012 01:10:54 Dyn Net 3.096 kg	Weighing number #000022 15-09-2012 01:17:15 Net 3.095 kg Quantity 3095 pcs	Weighing number #000027 15-09-2012 01:25:33 Target weight 3.000 kg Actual net 0.031 kg Deviation - 2.969 kg

Accumulative weighting

To accumulate the weighing values, put the object on the platform, when display show stabilized weight value (~ symbol off), press **M+** key to add the weight value to the total.



The accumulation is done with displaying the accumulation quantity. The following weighing will be accumulated by pressing **M+** key.

To follow the total value, press **MR** key and display will indicate the accumulated value.

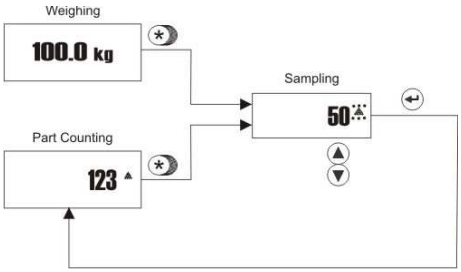
To print the accumulation, press **Enter** key when the accumulation is on the display. To erase the accumulation, press **MC** and accumulated value will be deleted after your confirmation.

8. PIECE COUNTING

BX21 indicator has a number of powerful features in count weighing as described in this section. It is recommended to use the * key for piece counting *(Page 28).*
Press * key to enter piece counting operation. The last used average piece weight (APW) value is valid in counting. APW default is the increment of the scale at power on.

Sampling

The scale counts the pieces on it by using the calculated average piece weight (APW) of the item. In sampling, BX21 measures a certain number of the pieces total weight in very high resolution and divides it by the number of pieces (the so-called sampling quantity) to find average piece weight (APW). Based on this calculated average piece weight, counting can than be carried out.



Sampling should be done very carefully for correct counting.

1. Empty the scale and press **Zero** key until ›0‹ symbol is seen on the display.
2. Press * key longer than a second until [**10**] or any other reference number of pieces seen on the display. This value is the quantity of pieces you can place on the platform for sampling.
3. If pieces are small or piece weights are not very close to each other, sampling in high quantity is recommended to increase the counting accuracy. To do it, press ▲ to change the sampling quantity as 20, 30, 50 or 100. You may press ▼ key for decrease the quantity.

4. When exactly counted quantity is placed on the platform, press **Enter** key.
5. Display will stop flashing after sampling and start to display the quantity on the scale.

Counting without container

1. After sampling press the **Zero** key, ›0‹ sign should be appear.
   Or call the APW of the item from CLU memory *(Page 19).*
2. Place the pieces you want to count on the weighing pan,
3. Display will show the total quantity of pieces.

If you want to accumulate the sequential counting, press **M+** key *(Page 19).*

To return to the weighing mode, press ***** key. The last used APW can be used at the following piece counting at the following piece counting.

Counting pieces into a container

1. For counting in the container, place the empty container on the scale and tare with the **Tare** key. After taring the scale (the **›0‹** sign should appear on the display).
2. If need be, you may perform sampling in the container after taring.
3. You can add parts in to the container for counting parts in it.

Note: *If the automatic taring function is active, you need not press the* ***Tare*** *key, because the scale is taring automatically as soon as the container is placed on the weighing pan.*

Counting pieces out of a container

1. Place the **full** container on the weighing pan and then press the **Tare** key to tare the scale (the **›0‹** sign should be appear).
2. Press the ***** key to go in to the piece counting mode.
3. If need be, perform sampling as
    a. Press the ***** key more than one second until sampling quantity seen.
    b. Change the sampling quantity by pressing ▲ or ▼ keys.
    c. Remove the sampling quantity of pieces from the weighing container and then press the **Enter** key for sampling.
    d. The scale starts to count by displaying the number of pieces after sampling by a minus sign.

    Or select the item APW from CLU memory *(Page 19).*
4. Take pieces out from the container how much you want.
5. The scale displays the number of pieces removed by a minus sign.
6. Press **Tare** key for the following counting.

Press ***** key to go basic weighing operation.

APW optimization

Sampling in high quantity gives more accuracy result although the high quantity is not easy to count by hand. APW optimization strongly recommended to you for faster counting in high quantity sampling for more accurate piece counting.
You may follow the procedure below for APW optimization as;

1. First count low quantity, for example 10 pcs and do sampling with 10 pcs.
2. Then count on the scale 2 times of the sampled quantity. In our example count 20 pcs on the scale and apply sampling for 20 pcs.
3. Then count 50 pcs on the scale and perform sampling with 50 pcs.
4. Then you may count 100 pcs on the scale and may perform sampling with 100 pcs.
   After each APW optimization, piece counting accuracy will increase.

Accumulate counting

You can accumulate the quantities of the sequential counting and can see the total value in the piece counting accumulator (CAD).

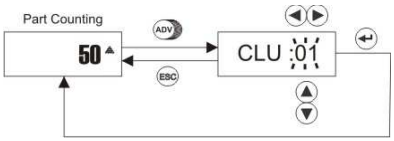
1. For counting accumulation, press **M+** key when the quantity is displayed the display and the scale is stable. You will follow the accumulation number on the display as [**Cad001**].
2. Place another batch on the scale for counting. After the second time loading press **M+** key again to add the second counting number to total [**Cad002**].
3. You can add the following piece counting values to the accumulation memory by pressing **M+** key.

The accumulated total value can be seen by pressing **MR** key.
Total quantity can be printed by pressing the **Enter** key during total indication in pieces.

To delete the accumulation, press **MC** key when count accumulation is displaying.

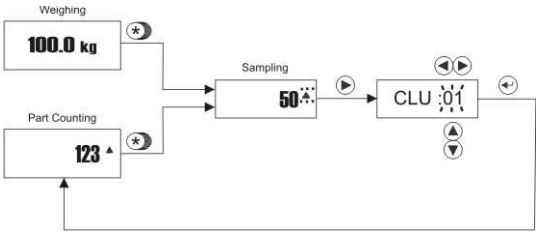
APW Recording to the memory after sampling

Up to 100 average piece weights APW of the different materials can be saved in to the CLU memory. For saving APW in to the CLU memory, press **ADV** key in piece counting mode more than one second to access CLU memory data saving as seen below.



Press ▲ and ▼ keys to change the flashing digit or press ► and ◄ to shift to the other digit to change it with ▲ and ▼ keys. After accessing the desired memory code, press **Enter** key for saving. The indicator goes back to the counting operation automatically.

Counting with preset APW record

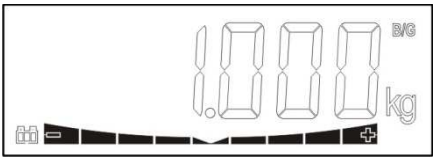


To access to memory database press * key long time in counting mode or in weighing mode and then ► key. Press **Enter** key after accessing the CLU memory code with navigation keys.

9. CHECK WEIGHING (+/-)

This function is used for classifying products as under, in tolerance and over weight. A Check weighing bar under the weight display helps to the operator to indicate the deviation from target weight. The Figure 9.1 indicates the check weighing bar appearing if product is in the tolerances or not. The indicator is also programmable for acoustic check weighing warning (*Page 24*).

Check weighing operation requires the nominal weight and tolerance values entry in to the PLU memory.



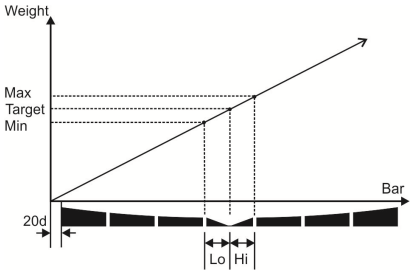
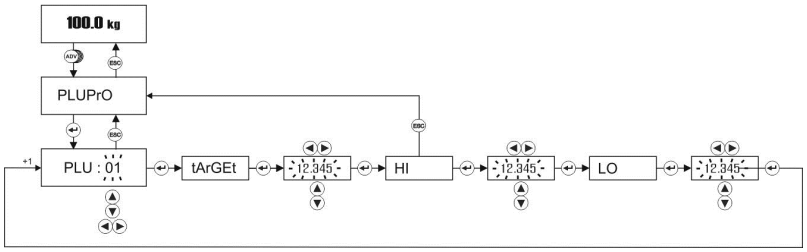


Figure 9.1 – Check weighing bar

Data entry to Check weighing memory PLU and Checking in quantity memory ALU

Warning: *The PLU memory data entries are done in power on unit.*

BX21 indicator has 100 check weighing PLU memory for different materials and 100 ALU memory for checking in quantity at piece counting. Data entries to the PLU / ALU memory are done in Advanced functions menu by pressing **ADV** key more than one second. And follow the diagram below to entry the data in to the PLU (or ALU) memory. Here the Target is the nominal value of the material. Hi and LO are the "+ tolerance" and "– tolerance" of the material in sequence. For example, if the target is 1000 g and the weight limits are 950 and 1100 g in checkweighing, Target = 1000 g, Hi = 100 g and Lo = 50 g values are entered. The values are entered in quantity to the ALU memory entry.

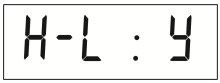


PLU / ALU code is increased or decreased by pressing ▲ or ▼ keys. The PLU / ALU code Target, Hi and Lo value's digit can be selected by pressing ► or ◄ keys and the digit value can be increased or decreased by pressing ▲ or ▼ keys.

Check weighing operation (+/-)

Check weighing is used for checking the material is in tolerance or not. The back light color is changing automatically during check weighing to indicate the load is under, okay or over. Refer to page 27 to adjust this feature.

1. Press **H-L** key more than one second until the message below prompt. The letter on the right indicates the check weighing is enabled or not.



n	Check weighing disabled
Y	Check weighing enabled

2. To enable the check weighing operation, press ▲ key, select " Y " and then press **Enter** key.
3. The PLU memory number is appears on the display as [**PLU :01**]
4. Change the PLU record number by using navigation keys and press the **Enter** key to start operation or press **Esc** key to go back operation without saving the PLU code.
5. The Target, Hi and Lo values displayed automatically before check weighing operation.
6. Place the object on the platform and the check weighing bar is activated after loading the platform as shown below.

Under

In tolerance

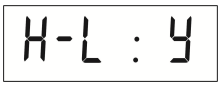
Over

To return from check weighing function to basic weighing, press **H-L** key for a long time, change the H-L item value to "n" and press **Enter** key. The check weighing bar will be disabled.

Checking the quantity at piece counting (+/-)

This feature is used for checking the quantity is in tolerance or not at piece counting mode. The back light color is changing automatically during check weighing to indicate the load is under, okay or over. Refer to page 27 to adjust this feature.

1. Press **H-L** key more than one second in piece counting mode until the message below prompt. The letter on the right indicates the check weighing is enabled or not.



n	Check quantity disabled
Y	Check quantity enabled

2. To enable the checking operation, press ▲ key, select " Y " and then press **Enter** key.
3. The ALU memory number is appears on the display as [**ALU :01**]
4. Change the ALU record number by using navigation keys and press the **Enter** key to start operation or press **Esc** key to go back operation without saving the ALU code.
5. The Target, Hi and Lo values displayed automatically before check piece operation.
6. Place the object on the platform and the check piece bar is activated after loading the platform as shown below.

Under

In tolerance

Over

To disable from checking function, press **H-L** key for a long time, change the H-L item value to "n" and press **Enter** key.

10. Animal Weighing

One of the function keys (The ***** key is recommended) has to be programmed for animal weighing with BX21. The indicator calculates the weight of the dynamic load after pressing the programmed function key. You have to adjust the dynamic filter value according to your application to get the best result. The dynamic weighing cycle is;

1. Load the scale.
2. Press the ***** key (if the function key programmed for animal weighing (*Page 28*))
3. The message [- - - - -] appears to indicate that the indicator is measuring the dynamic weight.
4. After calculating the dynamic weight, the indicator displays the weight value.
5. Press **Enter** key to print out or **M+** key to add the weight value to the accumulation.
6. Unload the scale or press **Esc** key to go back to the basic weighing mode.

11. Temporary Gross Weight Indication

You may need to look the gross weight value in net weighing operation for a short while. If one of the function keys is programmed to G/N function (*Page 28*), temporary gross weight value indication is available in net operation.

1. Press the G/N programmed function key in net mode.
2. The indicator activates the **B/G** and **G/N** signs and indicates the gross weight value.

3. The display goes back to the net weight indication after 5 seconds automatically.

12. Unit Change

You may need to change the unit in your application. One of the function keys should be programmed to Unit change function to use this feature. The changeable units are between **kg** and **lb** or between **g** and **oz**.

1. The weight indication is in power on unit after power on.
2. Press the function key programmed for unit change (*Page 28*).
3. The indicator switches the unit to the second unit.
4. Press the same function key second time to go back to the first unit.

Warning:

1. *The PLU memory and CLU memory data entries should be done in power on unit.*
2. *Unit change feature is not available after sealing the instrument in legal usage.*

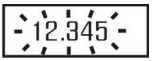
13. ADVANCED FUNCTIONS IN SET-UP MENU

You can change the instrument advanced functions in set-up menu by pressing **ADV** key more than one second.

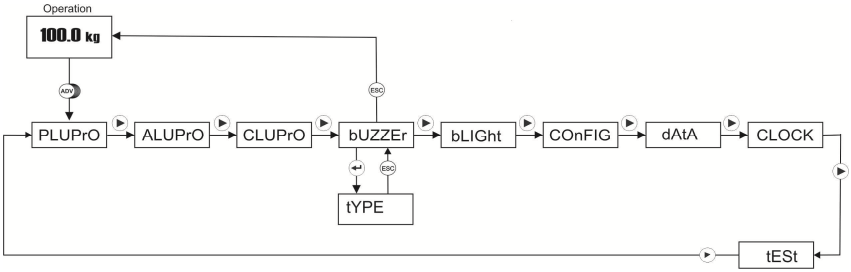
In ADV menu the navigation key functions are;

▲	- Increase the selected digit value.
▼	- Decrease the selected digit value.
▶	- Next menu item, - Shift the digit to the right to change the value.
◀	- Previous menu item, - Shift the digit to the left to change the value.
	- Go in to the menu and menu item, - Go to the next item.
	- Go to the menu from item, - Go to the operation from menu.

The symbols in ADV programming diagrams are;

	- Press the key in the circle to go to the following step.
	- Press the key more than 1 second until the next prompt appears.
	- Press the key the circle quantity times. (3 times for the symbol on the left)
	- Operation
	- Enter the value by pressing navigation keys. Press ▶ or ◀ keys to shift the digit; press ▲ or ▼ keys to increase or decrease the selected digit.

As shown in the figure below, you can access menus by pressing ▶ key to change any item in it. Press **Enter** key to access items in the selected menu or press **Esc** key to return previous step.



The advanced functions set-up is described with the flow diagrams as seen above.

PLU Memory Menu:

PLU memory is used in check weighing operation. This memory usage and data input are described in to the check weighing operation in Section 9 *(Page 20).*

ALU Memory Menu:

ALU memory is used to check the quantity at piece counting. This memory usage and data input are described in Section 9 *(Page 21).*

CLU Memory Menu:

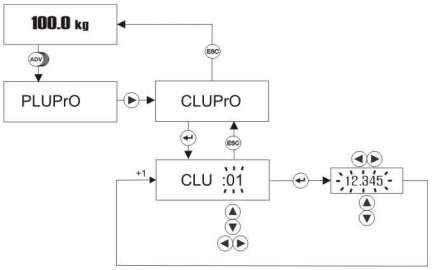
CLU memory is used in piece counting operation. This memory usage and APW saving after sampling are described in to the piece counting operation in Section 8 (*Page 17*).

Manual APW entry:

BX21 indicator has 100 memories for counting different materials. Data entry to the CLU memory is done in Advanced functions menu by pressing **ADV** key more than one second. And follow the diagram below to entry the APW (average piece weight) of the material in to the CLU memory.

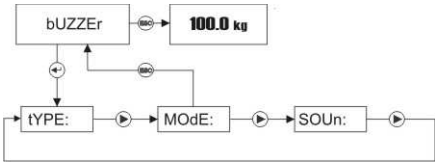
CLU code is increased or decreased by pressing ▲ or ▼ keys. The APW value's digit can be selected by pressing ► or ◄ keys and the digit value can be increased or decreased by pressing ▲ or ▼ keys.

Press **Esc** key 2 times to return operation.



Buzzer Menu:

To access to Buzzer related functions menu, press **ADV** key more than one second until [**PLUPrO**] message appears on the display. Press ► until [**bUZZEr**] prompt appears.

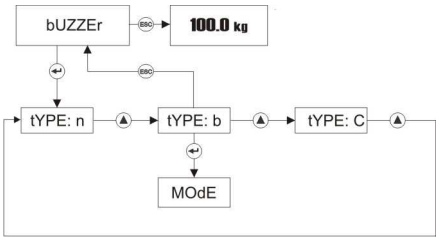


Buzzer Sound type at Check Weighing

The buzzer sound can be programmed as a continuous or only a one time 3 seconds warning as shown in the table below.

n	No sound.
b	One-time warning for 1 second
C	Continuous warning

Press **Enter** key to access Buzzer sound type item at [**bUZZEr**] prompt.



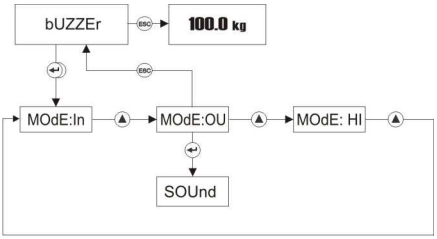
Press **Enter** key to go to the following item or press **Esc** key to go previous step after selecting buzzer sound type by ▲ key.

Buzzer Mode at Check Weighing

Buzzer warning can be done as seen in the table below.

Ou	Warn when weight is out of tolerance.
in	Warn when weight is in the limits.
Hi	Warn when weight is over the high limit.

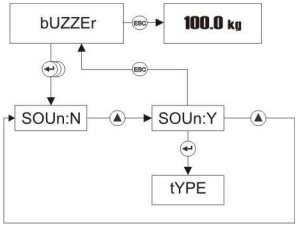
Press **Enter** key 2 times in Buzzer menu to access the warning mode item.



Press **Enter** key to go to the following item or press **Esc** key to go previous step after selecting warning mode by ▲ key.

Keypad Sound

Buzzer can produce a sound when pressing keys or not as seen below. Press **Enter** key 3 times in Buzzer menu to access this item.

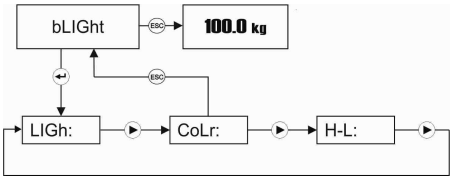


n	Keypad Sound off.
Y	Keypad Sound on.

Press **Enter** key to go to the following item or press **Esc** key to go previous step after selecting keypad sound by ▲ key.

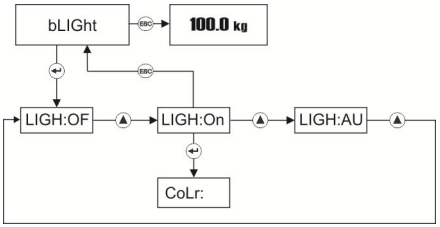
Backlight Menu (only BX21S) :

To access to Backlight menu, press **ADV** key more than one second until [**PLUPrO**] message appears on the display. Press ► key several times until [**bLiGht**] prompt seen. You can program the backlight operation, backlight color at basic weighing and back light warning at over – under operation in this menu.



Backlight

You may program backlight operation in this item as seen below. Press **Enter** key in Backlight menu to access the backlight adjustment item.

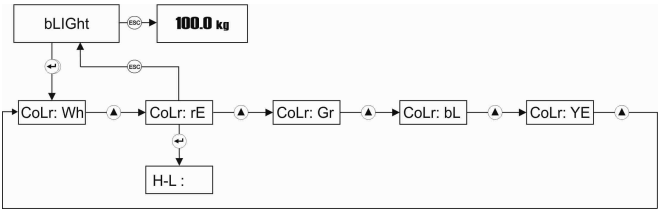


OF	Backlight always off.
On	Backlight always on.
AU	Backlight turns off, if the scale is not used 5 seconds.

Press **Enter** key to go to the following item or press **Esc** key to go previous step after selecting backlight by ▲ key.

Color

You may program backlight color in this item as seen below.



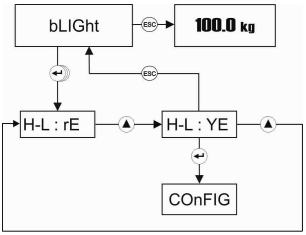
Wh	Backlight color is white.
rE	Backlight color is red.

Gr	Backlight color is green.
bL	Backlight color is blue.
YE	Backlight color is yellow.

Press **Enter** key to go to the following item or press **Esc** key to go previous step after selecting backlight color by ▲ key.

H-L Color

You may program backlight color in check weighing operation.

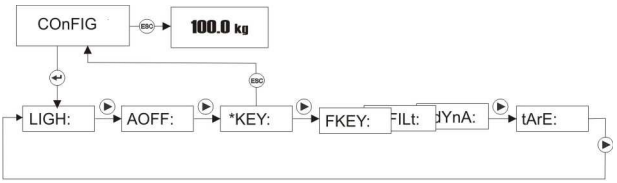


	Under	In tolerance	Over
rE	Red	Green	Yellow
YE	Yellow	Green	Red

Press **Enter** key to go to the following item or press **Esc** key to go previous step after selecting backlight color by ▲ key.

Configuration Menu:

To access to Configuration menu, press **ADV** key more than one second until [**PLUPr0**] message appears on the display. Press ► key several times until [**COnFIG**] prompt seen.

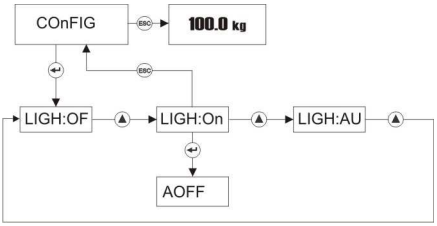


Backlight (only BX21)

You may program backlight operation in this item as seen below.

On	Backlight always on.
OF	Backlight always off.
Au	Backlight turns off, if the scale is not used 5 seconds.

Press **Enter** key in Configuration menu to access the backlight adjustment item.

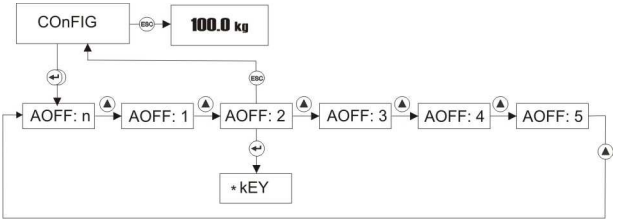


Press **Enter** key to go to the following item or press **Esc** key to go previous step after selecting backlight by ▲ key.

Auto Power off

The indicator is programmable for automatic power off to increase the battery life, if the scale is not used for some period. Press **Enter** key 2 times in Configuration menu to access the backlight adjustment item.

n	Disable.
1	Automatic power off after 1 minute.
2	Automatic power off after 2 minute.
3	Automatic power off after 3 minute.
4	Automatic power off after 4 minute.
5	Automatic power off after 5 minute.



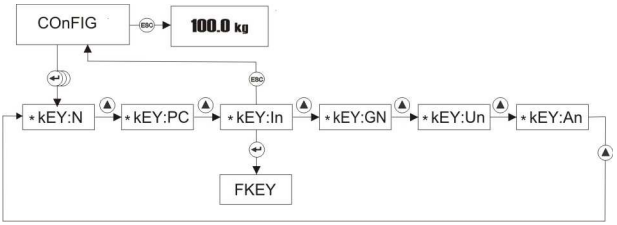
Press **Enter** key to go to the following item or press **Esc** key to go previous step after selecting auto power off by ▲ key.

* key usage

You can select this key function from the table below.

n	Disable.
PC	Piece count
In	Increased resolution
Gn	Temporary Gross indication in Net
Un	Unit change
An	Animal weighing

Press **Enter** key 3 times in Configuration menu to access ***** key item.



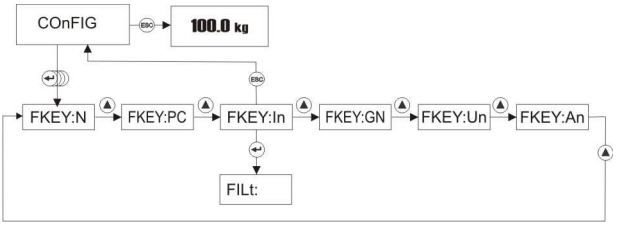
Press **Enter** key to go to the following item or press **Esc** key to go previous step after selecting * key function by ▲ key.

F key usage

You can select this key function from the table below.

n	Disable.
PC	Piece count
In	Increased resolution
Gn	Temporary Gross indication in Net
Un	Unit change
An	Animal weighing

Press **Enter** key 4 times in Configuration menu to access **F** key item.



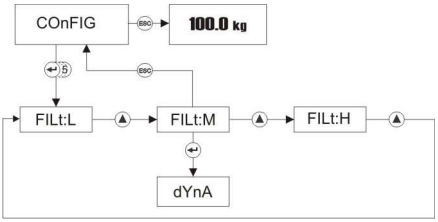
Press **Enter** key to go to the following item or press **Esc** key to go previous step after selecting **F** key function by ▲ key.

Stability Filter

You can change the digital filtering in this parameter to compensate the environmental effects on the scale performance or for faster response.

L	Faster response with low filtering
M	Medium settling time (recommended)
H	Slow response with high filtering

Press **Enter** key 5 times in Configuration menu to access filter adjustment.



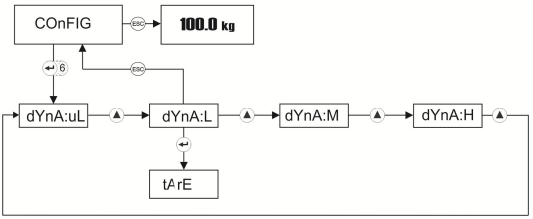
Press **Enter** key to go to the following item or press **Esc** key to go previous step after selecting digital filtering by ▲ key.

Animal Filter

You can change the dynamic filtering in this parameter to compensate the animal movement on the scale. Higher filtering gives more reliable result for very dynamic loads.

uL	Very Low filtering (1.6 second)
L	Low filtering (3.2 second)
M	Medium filtering (4.8 second)
H	High filtering (6,4 second)

Press **Enter** key 6 times in Configuration menu to access dynamic filter adjustment.



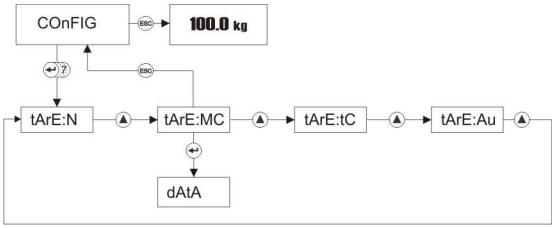
Press **Enter** key to go to the following item or press **Esc** key to go previous step after selecting dynamic filtering for animal weighing by ▲ key.

Tare

Taring feature of the scale can be programmed in this parameter for taring with key or auto taring as seen below.

N	Disable
MT	Multi tare.
TC	Tare – Clear in sequence
AU	Automatic tare

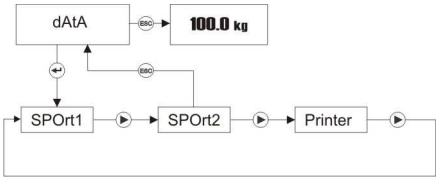
Press **Enter** key 7 times in Configuration menu to access taring function adjustment.



Press **Enter** key to go to the following item or press **Esc** key to go previous step after selecting taring function of the scale by ▲ key.

Serial Data Outputs:

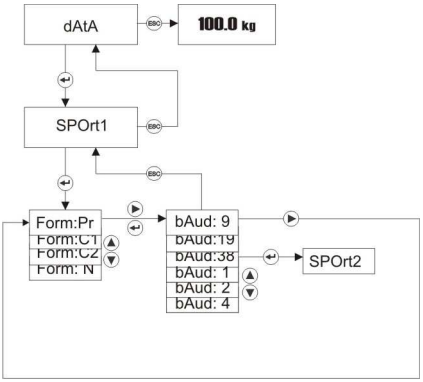
To access to Data Outputs menu, press **ADV** key more than one second until [**PLUPr0**] message appears on the display. Press ► key several times until [**dAtA**] prompt seen. Serial data output and printer data formatting related parameters are located in this menu.



Press **Enter** key to go in to the Serial port-1 setting or press ► key to access other menus.

Serial Port-1 settings

To change Serial port-1 settings, press **Enter** key when [**SPOrt1**] prompt seen in serial data output menu.



The first step is the data format changing. The display indicates two digits at the right the data format.

n	Disable
C1	Continuous-1 *Page 36* (select for remote display connection)
C2	Continuous-2 (for PC) *Page 36*
Pr	Printer

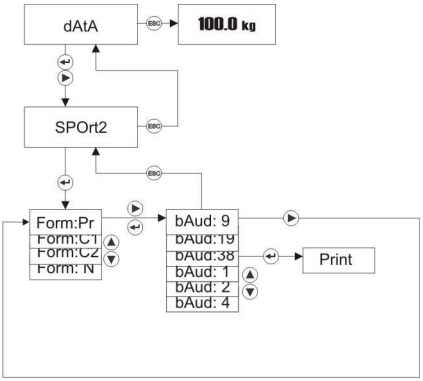
After changing the data format with ▲ key, press **Enter** key to go to the next step, baud rate adjustment. Two digits on the right of the display indicates the baud rate as;

01	1200 bauds
02	2400 bauds
04	4800 bauds
09	9600 bauds
19	19200 bauds
38	38400 bauds

Press **Enter** key to go to the following item or press **Esc** key to go previous step after selecting baud rate by ▲ key.

Serial Port-2 settings (option)

To change Serial port-2 settings, press **Enter** key when [**SPOrt2**] prompt seen in serial data output menu.



The first step is the data format changing. The display indicates two digits at the right the data format.

n	Disable
C1	Continuous-1 *Page 36* (select for remote display connection)
C2	Continuous-2 (for PC) *Page 36*
Pr	Printer

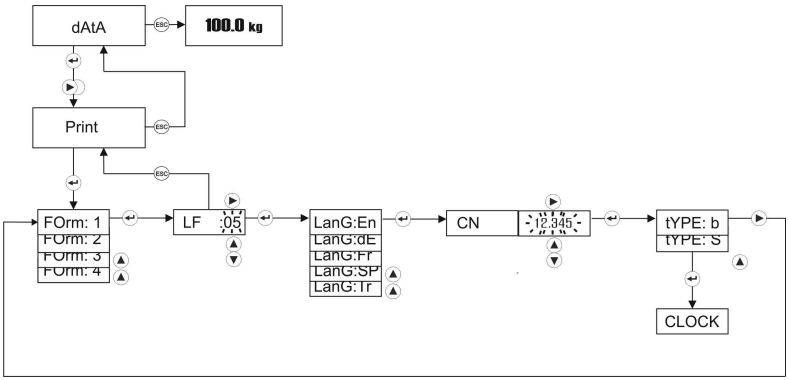
After changing the data format with ▲ key, press **Enter** key to go to the next step, baud rate adjustment. Two digits on the right of the display indicates the baud rate as;

01	1200 bauds
02	2400 bauds
04	4800 bauds
09	9600 bauds
19	19200 bauds
38	38400 bauds

Press **Enter** key to go to the following item or press **Esc** key to go previous step after selecting baud rate by ▲ key.

Printer setting

Press ► key several times until printer item seen.



The first item of printer setting is the printout format. Printer data output can be set to 4 different print form. The printout form differs also with operation mode as described on *Page 15*. Select the printout format from this table.

Select the format by pressing the ▲ key and press the **Enter** key to go to the following item, line feed. After changing LF item with navigation keys for feeding the printout from printer, press **Enter** key. The language selection item appears.

EN	English
DE	German
FR	French
SP	Spanish
TR	Turkish

Press **Enter** key to go to the following item or press **Esc** key to go previous step after printout language setting.

[CN] Weighing Ticket Number

Press **Enter** key at [**CN**] prompt to adjust the printing number in this item. CN number can be re-entered by pressing navigation keys. If the number exceeds 999999, it automatically returns to 1.

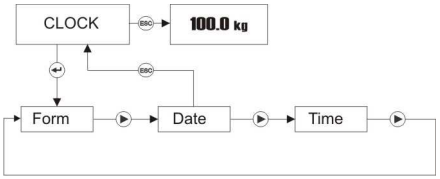
[tyPE: S] Printer Type

S	Print-out for narrow printers. Maximum 16 characters per line.
B	Print-out for wide printers. Maximum 26 characters per line.

After changing the printer type with ▲ key, press **Enter** key to go to the following item.

Clock Menu:

To access to Clock menu, press **ADV** key more than one second until [**PLUPrO**] message appears on the display. Press ► key several times until [**CLoCk**] prompt seen. Clock related items are located in this menu.

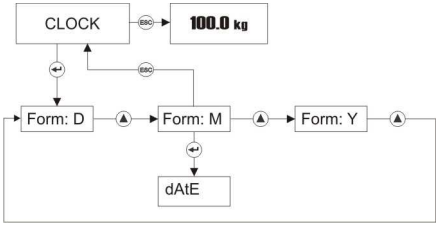


Press **Enter** key to go in to the Date format item or press ► key to access other items.

Date Format

Press **Enter** key at [**CLoCk**] prompt to adjust the date format for your country in this item.

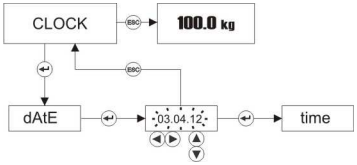
d	DD:MM:YY
M	MM:DD:YY
Y	YY:MM:DD



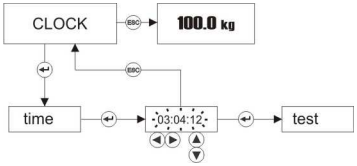
Press **Enter** key to go to the following item or press **Esc** key to go previous step after date format setting by pressing ▲ key.

Date

Press **Enter** key several times in clock menu until the date prompt seen. You can change the date as seen below by navigation keys.



Press **Enter** key to access time adjustment.



Press **Enter** key to go to the following item or press **Esc** key to go previous step after time adjustment with navigation keys.

Test Menu:

Test menu helps the service technician to find the problems source faster.

iCount

iCount is a value related with the ADC conversion to help the service engineer to follow the scale performance in high resolution without dead load compensation.

Press **Esc** key to return [**tESt**] menu. To go to the operation, press the **Esc** key the second time.

14. Continuous Data Formats

Continuous data output of the instrument is transmitted in the following data structure.

Continuous-1 Data Format

The data format of the Continuous-1 data output is;

	Status			Indicated						Tare								
STX	STA	STB	STC	D5	D4	D3	D2	D1	D0	D5	D4	D3	D2	D1	D0	CR	LF	CHK

The including of the status bytes STA, STB and STC are ;

Definition Table for Status A (STA)								
Bits 0, 1 and 2				Bits 3 and 4			Bits 5,6	Bit 7
0	1	2	Decimal point	3	4	Inc. size	Always 1	X
1	0	0	XXXXX0	1	0	X 1		
0	1	0	XXXXXX	0	1	X 2		
1	1	0	XXXXX.X	1	1	X 5		
0	0	1	XXXX.XX					
1	0	1	XXX.XXX					
0	1	1	XX.XXXX					

Definition Table for Status B (STB)						
Bit 0	Bit 1	Bit 2	Bit 3	Bits 4,5	Bit 6	Bit 7
1= Net	1= Weight negative	1= Error	1= Unstable	Always = 1	1=Zeroed with power on zero	X
0 = Gross	0 = Weight positive	0 = No Error	0 = Stable		0 = Not power on zeroed	

Status C (STC) is always hex '30'.

Note: *The weight data is represented with right aligned and the error messages (UNDER, OVER and A.OUT) are represented with left aligned in indicated data field.*

Continuous-2 Data Format

The data format of the Continuous-2 data output is;
[STX][STATUS][SIGN][INDICATED WEIGHT VALUE][UNIT][CR][LF][CHK]

Examples :

S+000123.4kg	(weight is stable and 123.4)
D+000123.4kg	(weight is dynamic and 123.4)
+	(Over load)
-	(Under load)
0	(ADC out error)

Checksum Calculation:

CHK (Checksum) = 0 – (STX + STATUS + ... + LF)

15. SPECIFICATIONS

A/D Converter		
A/D converter type		24 bit Delta-Sigma ratio metric with integral analog and digital filters
Input sensitivity		0.4 µV/d (approved); 0.1µV/d (non approved)
Analog input range		0 mV to +18 mV (unipolar)
Resolution		
Display resolution		up to 6.000 increment (approved); up to 30.000 increment (industrial)
Internal resolution		up to 16.000.000
Scale Calibration and Functions		
Calibration		Calibration is performed with or without load cell non-linearity correction.
Digital filter		3 steps programmable adaptive digital filter; 4 steps programmable filter at dynamic weighing.
Weighing functions		Taring, zeroing, auto zero tracking, motion detection, auto zero at power up, increased resolution, unit change, temporary gross weight indication.
Application functions		Basic weighing, check weighing, piece counting, animal weighing, totalization.
Memories		100 product memory at check weighing, 100 product memory at piece counting. 100 product quantity memory at piece counting.
Load cells		
Excitation		5 VDC max. 100 mA
Number of load cells		Up to 4 load cells 350 Ω or 12 load cells 1100 Ω in parallel
Connection		4- or 6-wire technique. Cable length: maximum 2000 m/mm² for 6-wire connection
Communication		
RS-232		1200 to 38400 baudrate, 8N1
Second RS-232 (optional)		1200 to 38400 baudrate, 8N1
Power Consumption		
	BX21	12 VDC (with 100 – 240 VAC / 12 VDC adaptor)
	BX21S	12 VDC or 100 – 240 VAC, 50-60 Hz
Environment and Enclosure		
Operation temperature		-10 °C to +40 °C; 85% RH max, non-condensing
Enclosure	BX21	ABS plastic , IP30;
	BX21S	Stainless steel , IP65

16. TROUBLESHOOTING

[**AdcOut**] on the display	Load exceeds the operation range. Call service for checking load cell and recalibration.
[**Over**] on the display	Load cell signal is higher than calibrated maximum level. Call service for checking load cell and scale calibration.
[**Under**] on the display	Load cell signal is lower than calibrated zero level. Call service for checking load cell and recalibration.
[**E E E**] on the display	Scale cannot zeroing at power on. Check the scale. The scale should be unloaded at power on.
Zeroing cannot be done.	Zeroing range can be over. Recalibrate the scale.
Wrong weighing	Recalibrate the scale. Only authorized technicians can interfere to the approved (sealed) scales.
Indicator is not working when charging.	Change the battery. Call service
There is a heat at the back of the housing at battery charging.	Change battery. Do not charge the battery and call service.
Err XX (others)	- Disconnect power adaptor and battery. - Connect battery and power adaptor in sequence - Switch on the instrument if it is not. - If there is any malfunction, change PCB or call service.

BAYKON
Industrial Weighing Systems

Declaration of Conformity

Uygunluk Beyanı

We; **BAYKON ENDÜSTRİYEL KONTROL SİSTEMLERİ SAN. VE TİC. A.Ş.**
Biz; Kimya Sanayicileri Organize Sanayi Bölgesi Organik Cad. No:31
34956 Tepeören Tuzla/İSTANBUL TURKEY

Declare under our sole responsibility that the product,
Tek sorumluluğumuz altında beyan ederiz ki bu beyanda bahsedilen ürün,

Type/Tip/ Model: BX21...

to which this decleration relates, is in conformity with the following standard(s) or other normative document(s).
aşağıdaki standart(lar) veya diğer dokümanlarla uyumludur.

EC Directive: AT Yönetmelikleri:		**Applicable Standards:** Uygulanabilir Standartlar:
Low Voltage Directive (LVD): (2006/95/EC) Alçak Gerilim Yönetmeliği (LVD): (2006/95/EC)		EN 60950-1:2008 / TS EN 60950-1:2008
Electromagnetic Compatibility (EMC): (2004/108/EC) Elektromanyetik Uyumluluk Yönetmeliği (EMC): (2004/108/EC)		EN 61326-1:2006 / TS EN 61326-1:2006
Non-Automatic Weighing Instrument Directive: (2009/23/EC) Otomatik Olmayan Tartı Aletleri Yönetmeliği: (2009/23/EC)		EN 45501:1992 / TS EN 45501:1997
Type/Tip	**BX21...**	CE [year] [code] M
EC Type Approval AT Tip Onayı	DK 0199.386	

Baykon, March 2013
Mart 2013

Emin SÖZER
General Manager
Genel Müdür

Baykon, March 2013
Mart 2013

Sedat AYDEMİR
Quality Assurance Manager
Kalite Güvence Müdürü

Important notice for verified weighing instruments in EC countries;
AT ülkelerinde doğrulanan tartı aletleri için önemli not;

M

Weighing instruments verified at the place of manufacture bear the preceeding mark on the packing label and a green "M" sticker on the descriptive plate. They may be set to work immediately.
Üretim yerinde doğrulanan tartı aletleri, ambalajında yandaki işareti ve tanıtım plakasında yeşil "M" etiketi taşırlar. Hemen kullanıma alınabilirler.

M

Weighing instruments which are verified in two steps have no green "M" on the descriptive plate, bear the aforementioned identification on the packing label. The second step of the verification must be carried out by the Baykon or by another authoritiesed firm. Please contact to Baykon.
İki aşamalı olarak doğrulanan tartı aletlerinin tanıtım plakasında yeşil "M" etiketi yoktur, sadece ambalajında yandaki işareti taşırlar. Doğrulamanın ikinci aşaması Baykon veya diğer bir yetkili kuruluş tarafından yerine getirilmelidir. Lütfen Baykon'la bağlantıya geçiniz.

The first step of the verification has been carried out in the manufacturing company. It comprises all tests according EN 45501-8.2.2. If national regulations in individual countries limit the period of validity of the certification, the operator of such a scale is himself responsible for its timely re-certification.
Doğrulamanın birinci aşaması üretici firmada gerçekleştirilmiştir. Bu, TS EN45501-8.2.2 'de yer alan tüm testleri içerir. Eğer tartı aletinin kullanıldığı ülkelerde ulusal hükümler sertifikanın geçerlilik periyodunu sınırlıyorsa, sertifikanın yenilenmesi tartı aletininin kullanıcısının sorumluluğundadır.

NOTES:

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